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CHANGE AND INNOVATION ARE ISSUES THAT CONSTANTLY CONFRONT AN ORGANIZATION. THIS STUDY EXAMINES THE CAVALRY BRANCH IN THE UNITED STATES ARMY FROM 1938 TO 45, AS IT CONFRONTED THE FUNDAMENTAL CHANGE OF MECHANIZATION. ~~THE~~ CAVALRY DOCTRINE AS ~~PRACTICED~~ PRACTICED BY RECONNAISSANCE GROUPS AND SQUADRONS IN THE EUROPEAN THEATER FORMED THE BASIS OF EXAMINATION. FIRST, SOURCES CONCERNING CHANGE IN MILITARY ORGANIZATIONS WERE USED TO CREATE A MODEL FOR SUCCESSFUL ADAPTATION. THEN THE METHOD WAS TO IDENTIFY BOTH OFFICIAL DOCTRINE, AND THE COMMENTARY AND IDEAS THAT ACCOMPANIED DOCTRINE'S PRACTICE AND EVOLUTION, IN COMPARISON TO THE MODEL OF SUCCESSFUL CHANGE. THE COMMUNITY OF CAVALRY LEADERS DID NOT READILY ADAPT TO CHANGE. AS A RESULT, MECHANIZED RECONNAISSANCE UNITS WERE COMMITTED TO COMBAT IN EUROPE WITH THE WRONG MISSION, ORGANIZATION AND EQUIPMENT. THIS FAILURE OF LEADERSHIP POINTS TO THE NEED TODAY FOR STANDARD BEARERS OF CHANGE.

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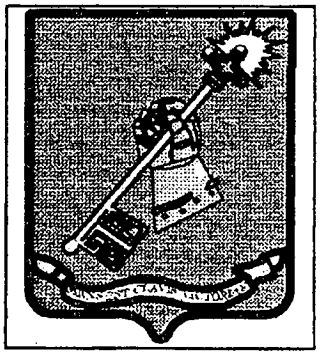
ADAPTATION TO CHANGE:

U.S. Army Cavalry Doctrine and Mechanization,

1938-1945

A Monograph
by

Lieutenant Colonel Dean A. Nowowiejski
Armor



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ABSTRACT

ADAPTATION TO CHANGE: U.S. ARMY CAVALRY DOCTRINE AND MECHANIZATION, 1938-1945 by Lieutenant Colonel Dean A. Nowowiejski, USA, 70 pages.

Change and innovation are issues that constantly confront an organization like the Army. During certain periods, the currents of change seem stronger than others. Today the Army confronts the Information Age revolution and a transition into a new century, while simultaneously executing more missions with fewer resources. From 1938-1945, the United States Army transitioned from the interwar period, through peacetime mobilization, to wage a successful global conflict.

This study examines a microcosm of the Army then, one that confronted fundamental change in mechanization, the Cavalry branch. Instead of focusing on the creation of the Armored Force and evolution of tank doctrine, this monograph examines mechanized cavalry doctrine as practiced by reconnaissance groups and squadrons in the European theater.

Initially, articles and books concerning organizational change were used to create a model for successful adaptation. Then the research included Field Service Regulations (FM 100-5); Cavalry Field Manuals, Cavalry School publications, doctrinal articles in **Military Review**, and a large selection of articles from **Cavalry Journal**. The method was to identify both official doctrine, and the commentary and ideas that accompanied doctrine's practice and evolution, in comparison to standards for successful organizational change.

The community of Cavalry leaders did not readily adapt to the sweeping currents of their time. They faced a difficult challenge, but their slowness in response caused the branch to lose its voice in Army mechanization, and to commit reconnaissance units to European combat with the wrong mission, organization, and equipment. Mechanized cavalry units were lightly equipped to conduct reconnaissance. In combat, they actually performed traditional cavalry missions, and needed more soldiers, plus heavier weapons. The model of successful adaptation points to a critical failure in leadership.

To be successful today, the Army needs leaders of vision, willing to be standard bearers of change, and most important, a community of subordinates who habitually reach toward, rather than resist, change.

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Change is a constant challenge for organizations. Today's army is trying to adapt to several changes: a new strategic landscape with the end of the Cold War, increasing involvement in operations other than war, technological change in information systems and precision munitions, decreasing size, and fewer resources. The question for professional officers is how to cope with this change as an organization. A useful place to begin is to analyze previous experience with the phenomenon of transformation.

I. *Introduction: A Model of Change*

There has been extensive writing about change and innovation in the military. This body of literature includes articles by Donn Starry, Huba Wass De Czege, Michael Howard, Richard M. Swain, and books by Stephen Peter Rosen and Harold R. Winton. Many of these works have elements in common. From these common elements a synthetic model can be derived that will be used in this paper to analyze change within Cavalry branch in response to mechanization.[1]

The basic elements of this model are context, definition, leadership, and integration. (See illustration 1) Change involves both external and internal forces in an organization. This framework moves in sequence from forces that are external to the organization to those essential for internal change, with linkages back and forth.

"Context" is composed of the various external forces that create or affect change. These include political, social, cultural, technological, or operational constraints. The organization must be attuned to these external dynamics in order to avoid becoming an anachronism.

"Definition" describes the internal interactions within an organization that promote change. This first demands a "common cultural perspective" among the reformers. They must speak a common language, one that includes shared ideas, viewpoints, and acceptance of the need for change itself. This common language is necessary for the effective transmission of new ideas. The educational system of an organization fosters this common perspective and ideology, and facilitates willingness to accept new ideas and ease of their transmission.

It is critical that change be defined in terms of strategic requirements for the organization, and that military change incorporate a clear anticipation of possible adversaries. These form the correct boundaries for the internal dynamics of interaction, so that as the organization evolves, its shape conforms to a clear vision for strategy and opponent. The educational structure of a military organization helps to propagate these boundaries.

The key element in organizational change is leadership. Change from within requires a standard bearer who has clear

long term vision for the reform. There must be a senior sponsor for the innovation to survive organizational resistance. There also must be other leaders who will serve as spokesmen for the reform, who foster a culture of adaptation. In one sense this band of leaders, both senior and junior, becomes a revolutionary brotherhood operating within the organizational structure. There are strong bureaucratic forces to overcome, so these innovators must be strategically placed within the organization. Presence within the educational system helps to multiply this revolutionary effect.

After fostering the internal dynamic of change, there must be an adequate means of disseminating the new idea. Overall funding, especially for research and development, must be appropriate to create new equipment and structure. The change must be proved viable by test, experimentation, or field trials. Without proof by demonstration, ideas remain in the realm of theory, are subject to dispute, and have little impact. There must be effective linkage to doctrine, training, leader development, materiel and soldiers. These are the key linkages within the organization of the Army.

Over the long term, organizational change itself becomes part of the context of future innovation, and the cycle of evolution repeats itself. Organizational feedback, effect, or output will influence the external context in which the

organization operates. Thus the model of change can be viewed as an organic whole that cycles continuously between external and internal dynamics.

This paper will analyze the changes that took place within the Cavalry branch of the United States Army from 1938 to 1945 in order to assess how that organization adapted to change. Most of historical writing on the interwar U.S. cavalry focused on mechanization culminating in the creation of the Armored Force. This collective analysis focused on the evolution of the tank and tank doctrine. In fact, the term "mechanization" implied the use of tanks to many interwar officers.

This paper will take a different approach, toward examining what was left in the Cavalry branch after the Armored Force was removed in 1940. The focus will be on the doctrine for operations of mechanized cavalry groups and reconnaissance squadrons in the European theater. These organizations carried on the branch tradition, and demonstrate the elements of the model of change already presented.

II. *Emergence from the Interwar Years, 1938-1940*

The Issue of Mechanization. The period 1938 to 1940 served as a transition period between the long term developments in mechanization of the interwar years, 1919-1939, and the developments associated with World War II

itself. For cavalrymen, mechanization was an issue that confronted the status quo of horse cavalry.

Mechanized cavalry was defined as: "cavalry whose principal items of equipment consist of self-propelled motor vehicles designed for combat purposes and upon which weapons are mounted."[2] Motorization referred to the use of unarmed motor vehicles in war, particularly for transport or supply. Both mechanized and motorized forces employed wheeled vehicles. Mechanized cavalry also employed tracked vehicles. Mechanization represented an innovative idea within the realm of cavalry that boded change. There were many in Cavalry branch who recognized that something fundamentally different was taking place in the realm of mechanization:

> Cavalry remains and will remain a powerful, and often decisive, arm. On the other hand, to fail to recognize that cavalry is passing through an all-important, in fact a decisive, change is to disregard entirely its role and its place in the army.[3]

United States Cavalry deployed only four regiments to Europe during World War I, but had the tradition and history of the Mexican Punitive Expedition in 1916 to recall with fervor. Cavalry officers had a world view that treated the defense of the United States along the border with Mexico as the horse cavalry's special mission.[4]

Evaluating the context of events emerging from the 1930s makes the decisions of professional military men appear more understandable and rational. They operated in an environment

where the legacy of World War I, the shortage of funds, primitive state of mechanized equipment, lack of practical experimentation with ideas, influence of strong traditional thought along branch lines, and a strategic concept of hemispheric defense, made radical departure to full advocacy of mechanization a difficult leap.[5]

Mechanization and the Armored Force. Many histories of the creation of the Armored Force operate with the context that the tank should have been adopted sooner in the U.S. Army, and ponder why this change was not more rapid.[6] The debate concerning mechanization during the interwar years was founded on the provisions of the National Defense Act of 1920, that gave the Infantry branch exclusive domain over tank development. Anything that Cavalry branch did in the area of mechanization was limited by this law; so that cavalry tanks were called combat cars to avoid its technical provisions. The earliest attempts at mechanization began with the failed attempt at Ft. Eustis in 1928, and were conditioned by Douglas MacArthur's decree in May 1931 that mechanization would belong to all the branches.[7]

This decree set the stage for competition between infantry and cavalry for ownership of mechanization as a whole, and the tank in particular. The debate that raged between the Infantry and Cavalry branches over the role of the tank caused both to draw on their branch traditions and

missions. Infantry saw the tank as an infantry support weapon, and therefore demanded heavier tanks to rupture prepared defenses during infantry assaults. Cavalry, on the other hand, saw mobility as their identifying characteristic, and therefore built combat cars that were lightly armed and armored, highly mobile, and capable of performing cavalry missions such as pursuit and exploitation.[8] This branch rivalry shaped the outcome of mechanization during the interwar period.

Cavalry Mechanization. Within Cavalry branch, advocates were divided into those in favor of mechanization, the horse, or a combination of the two. The standard bearer of mechanized cavalry doctrine was Adna Romanza Chaffee, Jr. Chaffee drew strongly on the cavalry emphasis on mobility. His brand of mechanization evolved into a combined arms concept that included motorized infantry and artillery. He was assisted by a small group of "mechanized-minded" captains, majors, and lieutenant colonels. A primary example of one of these revolutionaries was Major Robert T. Grow, who completed a half dozen articles during the interwar years trying to persuade the Cavalry community that the "iron horse" was merely a "substitution of the new for the old," and that "the application of mechanization to warfare has not altered missions."[9]

There were at least two significant leaders who limited the wholesale movement toward mechanization as the pace of change picked up with the beginning of World War II. These were Major General John K. Herr, the last Chief of Cavalry, and Brigadier General (Retired) Hamilton S. Hawkins, who became the **Cavalry Journal** commentator on tactical thought in 1937. The influence of both leaders insured that doctrinal and organizational change was stillborn. Their example provides a key lesson concerning the impact of leaders who oppose innovation.

MG Herr took office as Chief of Cavalry in March, 1938. One of his key dilemmas regarding mechanization was the lack of a mechanized unit at the Cavalry School. MG Herr sensed an increasingly obvious need to incorporate expanded mechanized training into the curriculum. He wanted to keep the Cavalry School at Fort Riley, but would have to sacrifice horse cavalry units somewhere to obtain mechanized ones at the school. He wasn't willing to make the sacrifice. This issue grows in importance when one considers the role that educational institutions play in fostering change. With no mechanized cavalry permanently at the Cavalry School, there was no demonstration unit to help promote acceptance among officers and soldiers who trained there.[10]

Brigadier General Hawkins retired from active service in October of 1936 as the Commander of the 1st Cavalry Division.

In some ways, his career is the archetype of the older generation of officers on duty just before the Second World War. He was born to an Army family, served in the Philippine Insurrection and First World War, was the Assistant Commandant of the Cavalry School at Fort Riley, commanded the 3d Cavalry Regiment, 14th Infantry Brigade, and 1st Cavalry Brigade. He developed a reputation as a master of Cavalry tactics, and upon his retirement began a series of editorials in **Cavalry Journal** that showed him to be of the "old school" of Cavalry thought, and a spokesman for those who resisted mechanization. His attitude toward mechanization and mechanized cavalry reconnaissance is summarized in the following comments:

> Imagination gone wild because there is... a sheep-like rush toward mechanization and motorization without clear thinking or any apparent ability to visualize what takes place on the...battlefield, have led to a foolish and unjustified discarding of horses...
>
> There is no sense in trying to organize a large so-called reconnaissance unit of mechanized or motorized forces.[11]

Branch leaders like Generals Herr and Hawkins led a sub-community of cavalry officers who were resistant to change, particularly to complete mechanization at the expense of horse cavalry. Herr prevented the branch from gaining additional mechanized forces, even a mechanized division when one was offered, because of his adamant refusal to surrender any horse cavalry units. Hawkins retarded the thinking of a

generation of cavalry officers. These leaders made decisions that retarded branch evolution during the critical Protective Mobilization period as the Army at large girded itself for war.[12]

Interwar Cavalry Doctrine and Equipment. During the 1930s, there was one unit that set the pace for Cavalry mechanization: the 7th Cavalry Brigade (Mechanized) at Fort Knox, Kentucky. As the decade began to close, maneuvers and increasing appropriations helped to foster rapid development of independent mechanized doctrine employing combined arms. The late thirties were a time of increasingly rapid technological change-- improving automotive capabilities, support by tactical aviation, and an increasing demand for mobile radio-electronic communications.

Mechanized equipment continued to improve so that it was more maneuverable cross-country and more reliable. The 7th Cavalry Brigade incorporated tactical aviation in support of mechanized cavalry; an example was the maneuver of the 7th Cavalry Brigade against the 2d Cavalry at Fort Riley in October, 1938.[13] Seventh Cavalry Brigade commanders, Adna Chaffee and Bruce Scott, learned to use aviation as a command and control platform by flying over the lead formations.[14] Communications were a simultaneous challenge. Leaders faced the technical question of communicating over longer distances as they expanded the geographical scope of operations using

mechanized vehicles. Communication by radio would later be a critical task during combat operations in Europe.[15]

By 1938, mechanization advocates had begun to win some acceptance within the Cavalry community, and had created an elaborate doctrine integrating tactical aviation, mechanized cavalry for reconnaissance, machine-gun troops as a base of fire, and combat cars as a striking force strong in firepower and shock effect. Doctrine for the employment of mechanized cavalry in 1938 included both the ideas of reconnaissance and combat as cavalry missions.[16]

Mechanized cavalry was treated as a support arm to horse cavalry.[17] Horse advocates retained the primary cavalry missions for horse units along the forward line of troops. These included security, delay, holding key terrain, cover, and offensive and defensive combat. Horse cavalry units also used tactical air support.[18]

Both horse and mechanized cavalry could perform reconnaissance missions; reconnaissance was not yet the exclusive purview of mechanized cavalry.[19] Mechanized reconnaissance vehicles held the advantage for distant reconnaissance and for rapid reconnaissance. Speed was considered an essential element of force protection. Even horse regiments had platoons of scout cars for use in regimental reconnaissance. The mission of mechanized cavalry therefore became "strategic" reconnaissance. This created an

important doctrinal precedent with a long legacy, since reconnaissance remained the only mission for mechanized cavalry after the Armored Force was created in 1940.

Mechanized cavalry reconnaissance units were principally equipped with wheeled reconnaissance vehicles. The primary reconnaissance vehicle in 1938 was the armored car. An armored car was defined as, "An armed and armored wheeled motor vehicle designed primarily for reconnaissance." The designated reconnaissance vehicle changed from armored cars to scout cars between 1938 and 1940. This was essentially a name change only. Mechanized reconnaissance vehicles were wheeled throughout World War II.

Ideas Under Scrutiny. In the First Army Maneuvers of 1939, the 7th Cavalry Brigade moved from one flank of the friendly formation to another, at night, demonstrating "strategic mobility."[20] However, this maneuver did not present the opportunity to test the ideas of distant reconnaissance written in the doctrinal manuals. The importance of these maneuvers to the cause of mechanization was that for the first time mechanized cavalry proved their ability to move long distances in broken terrain in an actual maneuver.[21]

Success in maneuvers demonstrates that part of the problem, when considering the model for change, was that there was limited connection from the external developments of the

period to the internal changes necessary to foster change. Ideas within military organizations had limited opportunity to be transmitted because they remained in the realm of theory, not demonstrable fact. No one had seen the claims made for mechanization demonstrated in the field. There wasn't money enough, and the technology lagged. It was not until intensive maneuvers began late in the 1930s that theories of mechanization were proved true.

When we consider the cumulative impact of the several changes that began to affect professional officers after 1938, we gain a greater appreciation for the magnitude of the challenges they faced. World war was breaking out, technology exploding, the Army size and budget growing, and a wide array of ideas clamoring for attention. **Cavalry Journal** reflected a healthy exchange of ideas concerning mechanization throughout this period, and will be used in this paper along with **Military Review** as a barometer of the acceptance of innovation.

III. *Change during Protective Mobilization, 1940-1941*

A Changed Environment. The Protective Mobilization period marked the nation's first peacetime draft and first field Army-sized peacetime maneuvers during a two year long period when the nation girded for war.[22] The case for

mechanization was strengthened during this period by the German invasions of Poland and France. The success of blitzkrieg doctrine proved on the battlefield the efficacy of mechanized theory. The use of combined arms, mechanized forces on the Chaffee model strengthened his hand in efforts to increase the size of U.S. mechanized forces. In a March 1940 article in **Military Review**, Major R. S. Ramey, a cavalry officer teaching at the CGSC, said that it was time to wake up and pay attention to the lessons of the invasion of Poland and the performance of the 7th Cavalry Brigade in August, 1939 at the Plattsburg maneuvers.[23]

The spring maneuvers of 1940 finalized the independent status of the armored force. Chief of Staff George C. Marshall envisioned the 1940 spring maneuvers as the first opportunity to test cavalry concepts during corps level operations. During these Third Army maneuvers in Louisiana, practically all the mechanized assets of the United States Army were combined ad hoc into a potent force. Field performance demonstrated the ability of mechanized forces again. By then it was clear that the United States was lagging behind European powers in the size of mechanization, and that the Infantry and Cavalry branches still represented fundamental opposition to the speed and magnitude with which the United States needed to adapt. The result was the famous

meeting in the high school at Alexandria, Louisiana that ultimately resulted in the creation of the Armored Force.[24]

Cavalry branch had the opportunity to be the sponsoring agent and fountainhead of integrated mechanized doctrine until the separate Armored Force was created. With the creation of the Armored Force, the bulk of the cavalry leadership for mechanization spun off into another orbit with General Chaffee, and a truncated community of mixed advocates remained in the Cavalry branch. Cavalry lost its tanks, and its voice in Army mechanization issues.

This loss was reinforced by the death of Adna Chaffee in August, 1941.[25] There was no clear leader for further mechanized adaptation within the branch. This lack of leadership would have the impact of allowing mechanized reconnaissance units, all that remained within Cavalry branch after the Armored Force was created, to enter World War II with the wrong doctrine, equipment, and organization.

Reconnaissance Doctrine. Mechanized cavalry, apart from tanks, had been a deep reconnaissance force in the all doctrine until 1940. Both horse and mechanized cavalry regiments depended upon mechanized reconnaissance. The great question governing wheeled vehicle use for reconnaissance was their ability to move cross-country off roads. This ability was not convincingly proven until the spring maneuvers of 1940, which tested the maneuverability and mission of

mechanized reconnaissance units. This performance strengthened the role of wheeled mechanized cavalry in corps reconnaissance.[26]

Reconnaissance doctrine also included the capacity to fight for information to a limited extent at the squadron level, in contrast to reconnaissance by stealth alone. In 1941, the mission of scout elements was primarily to be reconnaissance and security. The best way to perform reconnaissance was by stealth, but combat would be frequently necessary. Combat would also be necessary in security missions. Following the 1940 spring maneuvers, there was a call for the corps reconnaissance regiment to obtain more antitank capability and the armored punch necessary to break through enemy screens. The relative strength of mechanized reconnaissance units to engage in combat would be an issue throughout World War II.[27]

The Corps Reconnaissance Regiment. The dominant concept for mechanized cavalry during this period was the creation of a corps reconnaissance regiment composed of one squadron of horse cavalry, and one mechanized cavalry squadron. The often repeated ethic in branch literature that suppressed the division between the horse and mechanized camps was that the best cavalry was a combination of both horse and mechanized, that "cooperation" must exist.[28]

This structure combined the advantages of both types of cavalry in one unit, horse for close operations, mechanized for deep. It also compensated for the supposed weaknesses of both horse and mechanized units. Horse cavalry covered broken terrain inaccessible to mechanized vehicles, but was transported in portee trailers to acquire more road distance and deployment speed. The mechanized cavalry squadron had the explicit mission of distant reconnaissance because of its "strategic mobility," and thereby compensated for the limited range of horse cavalry.[29]

The corps reconnaissance regiment carried both the heritage and missions of horse and mechanized cavalry. Its primary mission of continuous ground reconnaissance was subject to be interrupted by any suitable cavalry mission, including combat when reinforced. This provision for combat stemmed from the inclusion of the horse squadron in the regiment, since the scout cars, the primary vehicles of the mechanized squadron, were to "operate by the 'sneak and peek' method and avoid combat unless absolutely necessary."[30]

The doctrinal thinking of the designers of this regiment would not permit the assumption of heavier combat missions by mechanized reconnaissance units, that special privilege was reserved for the horse squadron. The very structure of this corps reconnaissance regiment demonstrates the unwillingness of cavalry decisionmakers to make a clear choice between horse

and mechanized cavalry. Why choose one type of cavalry or the other when they could have both? Instead, the trend to say that mechanized cavalry could not fight was reinforced.

There were limited opportunities to test the corps reconnaissance regiment idea. Three occasions were the Fourth Corps maneuvers in 1940, and the 1941 Louisiana and Carolina maneuvers. MG Herr, the Chief of Cavalry, supported the idea of the mixed corps reconnaissance regiment.[31] The conclusion after the maneuvers was that the mixed regiment had performed so well that the existence of Cavalry branch itself, which was clearly threatened by the formation of the Armored Force, had received a reprieve.[32] The mechanized reconnaissance troop performed well enough to support the assertion that each division should have one.[33] The after-action articles for the few maneuvers where the regimental ideas was tested unanimously concluded that the horse-mechanized combination was sound.

For proper adaptation to take place, what remained of the Cavalry branch had from 1940 to 1942 to adjust to the realities of the loss of the Armored Force. This period included the significant opportunity of the 1941 Louisiana and Carolina maneuvers, but there was no attempt to shift more of the traditional missions of the cavalry to mechanized reconnaissance squadrons, or to change the function of the corps reconnaissance regiments.

Instead, the Cavalry branch under General Herr seemed content with self-congratulation over the demonstrated capacity of horse and mechanized cavalry units to work together in cooperative fashion. What persisted was a condition of stasis in the waning window of opportunity to adjust to the reality that the horse was fading. Under more adaptive leadership, cavalry could have shifted more traditional cavalry missions, including offensive and defensive combat, to a more heavily-equipped mechanized cavalry. Mechanized cavalry potential was no secret after Chaffee.

IV. *The Crucible of Combat, 1942-1945*

The Demise of the Chief. In March, 1942, the branch community as it was then known ceased to exist with the War Department reorganization and the abolition of the office of the Chief of Cavalry. The Cavalry community lost its voice in the Army leadership. Thereafter, any doctrinal revision was the responsibility of Army Ground Forces, dominated by Lieutenant General Lesley McNair. Any change emanating from what remained of Cavalry branch after 1942 (pre-war officers still on duty, the branch school at Fort Riley, and the branch periodical, **Cavalry Journal**) would essentially have to be innovation from the bottom-up, because no titular head existed.[34]

Early in 1942, the branch was also effectively unhorsed. All cavalry units, except cavalry divisions, were mechanized, and cavalry divisions were not allowed to take their mounts overseas later. This closet coup by Generals Marshall and McNair insured that cavalry units deploying to Europe would do so as mechanized only units.[35] Since the majority of mechanized cavalry operated there, the analytic focus of this paper will be on reconnaissance groups and squadrons in the European theater.

Doctrine for Employment. In theory, horse cavalry still retained the majority of the classical missions of cavalry, including security, offense, and defense. United States horse cavalry was dragoon cavalry in 1942; the horse was a means of transport only. The horse cavalryman traveled mounted, and fought dismounted. Firepower derived from what the horse and cavalryman carried. Whatever the missions in doctrine, in effect horse cavalry had ceased to exist, so the traditional cavalry missions needed reassignment.[36]

The mission of mechanized cavalry throughout the war was:

> Mechanized cavalry units are organized, equipped, and trained to perform reconnaissance missions employing infiltration tactics, fire, and maneuver. They engage in combat only to the extent necessary to accomplish the assigned mission.[37]

The corps reconnaissance regiment was a key transition concept before March 1942 and after. As discussed, the corps

reconnaissance regiment had a place for both horse and mechanized cavalry. After the horse squadrons were abolished, the ideological remnant for the employment of mechanized cavalry was reconnaissance only. This had been the mechanized squadron mission in the combined regiment. The problem was that no unit assumed the traditional horse cavalry fighting missions of offense, defense, or security.

This resulted in a doctrinal mismatch of substantial proportions when these mechanized units arrived in theater to discover that the battlefield did demand the firepower, mobility and protection required for combat missions. Even when on reconnaissance missions, these units often had to fight for information. The mechanized cavalry mission of reconnaissance-only did not suit the needs of the actual battlefield. This is one of the key dilemmas of the World War II mechanized cavalry.

In some respects, cavalry doctrine became schizophrenic: required to be light and mobile, while still needing the old fighting power of heavy cavalry. The force tried to be all things to all situations, and was ill-suited for its actual mission. This split personality seems to stem from the incapacity of the branch as a whole to incorporate the phenomenon of mechanization, first with the tank and later with the armored reconnaissance vehicle. Officers could not decide what to do about the waning place of the horse on the

modern battlefield, or what is more important, how to incorporate mechanized doctrine properly. Unwilling to concede primacy to the vehicle, the branch allotted to mechanized forces only light cavalry missions, without providing for the continuation of the heavy cavalry heritage.

Different Views of Reconnaissance. By 1943, there was a difference in concept of reconnaissance between the squadron level, which called for the squadron to be able to fight for information, and the reconnaissance doctrine at troop level that called for reconnaissance by stealth in light wheeled vehicles.[38] The light armament of the armored car (37 millimeter) and scout vehicle (.30 or .50 caliber machine gun) made the doctrine of reconnaissance by stealth in the reconnaissance troops hazardous to execute. According to the manual, the lack of armor in light reconnaissance vehicles was to be overcome by the characteristic of speed in decision and action during operations of the squadron. These troopers were to overcome enemy bullets by the quickness of their thinking, rather than the protection offered by their vehicles.[39]

When operating as a unit, reconnaissance squadron doctrine called for it to be able to perform missions of offense and defense, along with reconnaissance, within the limitations of weapons. The manual further stated that it was imperative that the tactical training of reconnaissance troops emphasize offensive combat. The squadron was not to lose

contact once gained; this surely implied combat against a resisting enemy. The squadron's instructions allowed it to fight for information; troop employment within the squadron emphasized stealth. There was a split focus in mechanized reconnaissance doctrine.[40]

Provisions for Reality. The organization of the reconnaissance squadron represents the juxtaposition of both concepts of reconnaissance. Mechanized cavalry units could fight, but only if they had to. This again demonstrates the quality of trying to be both light and heavy at once. Even though the dominant mechanized idea was reconnaissance by infiltration or stealth, squadron organization throughout World War II provided for reconnaissance by contact. Squadron organization by 1944 included a support troop of light tanks, and an assault gun troop of self-propelled howitzers. The support troop's mission was to allow reconnaissance elements to break through the crust of enemy screens, and for use as a reserve.[41] The Assault Gun Troop provided essential indirect and direct fire support.[42] Both troops provided essential firepower for a squadron in contact.

Where offensive and defensive missions were necessary, they were treated as exceptional operations, requiring mechanized cavalry units to be reinforced. During continental employment of cavalry groups and squadrons, reinforcement by infantry, artillery, engineer, and tank destroyer units was

habitual practice.[43] Reinforcement for fighting cavalry would not have been necessary if proper recognition had been given to the need to fight first.[44]

Lessons From Combat. The United States Army's experience in North Africa and Tunisia provided the first combat opportunity in the European theater for "lessons learned." These were rapidly incorporated by the Cavalry School as instructional material. **Cavalry Journal** published several articles later consolidated with no synthesis or editorial comment in a book entitled **Modern Reconnaissance.**[45]

Officers writing from North Africa did not openly assault the reconnaissance-only doctrine as strongly as those who fought later on the continent. Their writing on mechanized cavalry operations does not focus on doctrinal issues; the emphasis is instead on practical lessons of combat survival in the form of tactical accounts by cavalry leaders. Cavalry reconnaissance units in North Africa and Sicily only fought at the squadron level, one per the few divisions that deployed. This limited scale of early involvement partially explains the limited discussion of cavalry doctrine. The combat experiences that stood doctrine on its head occurred later during large scale operations on the continent.

As early as 1943, **Military Review** highlighted the common misunderstanding which many staff officers demonstrated concerning the proper use of the reconnaissance troop. Many

officers thought the reconnaissance troop was a "small armored division, heavy with sustained firepower, supply facilities and shock action."[46] Another article written by an instructor at the Command and General Staff College a few months before the end of the war also said that Corps and Division G-2's and G-3's did not understand how to employ mechanized cavalry:

> G-2 and G-3 should not assume that the squadron...is capable of heavy shock action, sustained combat power, and sustained combat... The squadron and the group are both reconnaissance units.[47]

This assessment concluded that officers should not expect mechanized cavalry to perform security or "protective" missions without reinforcement.

So the teachers of doctrine realized during the war that cavalry reconnaissance tenets were being misapplied by light cavalry units attempting heavy cavalry missions. This further supports the assertion that there were recognizable forces pushing mechanized cavalry reconnaissance units toward heavy cavalry missions. The Cavalry School, Command and General Staff College and doctrinal literature did not properly account for those forces. Instead they decried the misapplication of an already flawed doctrine. Mechanized cavalry reconnaissance units should have been better equipped to fight.

This message was unanimously echoed by War Department Observer Reports that began to flow back from the continent of Europe in early 1945. There were two consistent themes in

these reports on mechanized group and squadron operations. The first was that the reconnaissance-only mission for mechanized cavalry was defective, that these units were performing the full range of cavalry combat missions, and needed to be equipped and organized to do so. The second theme was that the organization needed more dismounted soldiers to perform such missions. These reports from the field of battle bore out the failure of cavalry doctrine to adapt to the realities of changed conditions.[48]

V. Post-War Assessment

Following World War II, there was a multitude of forums which analyzed U.S. prosecution of the war. These varied from narrowly focused individual articles in **Cavalry Journal** to full scale review Boards. The Cavalry School and the staff of Army Ground Forces conducted analyses of the doctrine and organization of mechanized cavalry.[49]

One writer was LTC Charles J. Hoy, who had commanded the 81st Mechanized Cavalry Squadron in Tunisia, and spent the remainder of the war at the Cavalry School. His article in **Cavalry Journal** is illustrative. Hoy's conclusions coincide with many others concerning the need for revised doctrine on employment of mechanized cavalry. He lists the numerous missions other than reconnaissance that mechanized cavalry performed during World War II, and states:

> Each tactical decision which called for the employment of mechanized cavalry

> on missions other than reconnaissance was made because there was an immediate battlefield requirement[50]

Hoy also stated that the organization and equipment of mechanized cavalry were not "entirely satisfactory for the missions assigned on the battlefield." So a combat veteran and Cavalry School instructor concluded that a wider role and capability was needed.

After the war ended against Germany, The General Board of the European Theater convened. The original orders that established the board were dated 17 June 1945. The Report of the General Board provides the most concrete review of the experiences and doctrinal conclusions of those cavalry leaders who had just experienced combat and put the reconnaissance mission to the test. It is thorough both in content and methodology, apparently free from bias, and remains a rich historical resource.[51]

The General Board concluded that the missions which mechanized cavalry performed during the war did not match the doctrine of reconnaissance only. For mechanized cavalry group operations the most common missions were defensive or security missions. Cavalry doctrine for mechanized operations prohibited the use of mechanized cavalry for extensive defensive employment. Mechanized cavalry units fought mounted only one third of the time, and universally decried the limited strength in riflemen for dismounted operations.[52]

The General Board recommended that the post-war missions of mechanized cavalry be changed to the traditional cavalry missions, including combat, which had remained throughout World War II the realm of horse cavalry. It called for mechanized forces to retain their emphasis on mobility, but with increased firepower, off-road capability, and more dismounted soldiers.[53]

An additional Army Ground Forces staff study the same year had similar findings. It recommended increased capabilities for dismounted reconnaissance and combat, and increased firepower for mechanized cavalry. The light tank was recommended over the armored car for reconnaissance. The study recommended the mission statement of mechanized cavalry be changed from "reconnaissance missions, employing infiltration tactics, fire, and maneuver" (1944 mission) to "reconnaissance, security and special missions requiring mobility. In emergency they may be employed on other types of ground combat missions." This formal recommendation to expand the 100-5 definition of mechanized cavalry missions beyond reconnaissance was approved for instruction at the Command and General Staff College.[54]

Horse cavalry doctrine remained in existence even after World War II. There were still strong advocates for horse cavalry writing in **Cavalry Journal** until Cavalry branch itself was abolished in 1950. Until the abolition of horse cavalry,

the missions of cavalry were shared between horse and mechanized units. This shows the strength of old ideas within the branch, ideas and advocates whose strength had made it difficult for the branch to evolve into a completely modern force.[55]

VI. Cavalry and Change

So when one compares the World War II doctrine for mechanized cavalry with what those units experienced in the European theater, there was a distinct mismatch. Only after the war was over were substantial steps taken to correct this deficiency. This poorly adapted doctrine is traceable to failure to adapt to change within cavalry branch itself.[56] Let's review the branch response to the collective changes of 1938 to 1945 using the model of organizational change: context, definition, leadership and integration.

Context. Cavalrymen had to contend with several external forces during this turbulent period. First, there was the political decision for war that ended the twenty year period of peace, and rapidly changed the conduct of war as it had been known. In some respects, military men spent the remaining years of World War II coming to terms with the precedent of blitzkrieg set in Poland and France.

The Protective Mobilization Plan brought the United States Army out of its sleepy solitude and into the mainstream of American concern. This was tantamount to the end of social

isolation. Officers who had theorized about new concepts of war now had to put them into practice in an Army that exploded in size between 1940 and 1942. Further, these were civilian soldiers, unaccustomed to the military strictures that dominated the regimented life of the interwar Army. Officers had to cope again with the social phenomenon of a large, citizen army.

In some respects, the technological changes of the interwar period were the most decisive. In 1920, there was no argument about the limited cross country capability of the tank. Tanks were large, bulky, and unreliable. But by 1939, officers could argue that mechanized forces were no longer restricted to roads or easy terrain.[57] This, for instance, was a significant result of the August 1939 First Army maneuvers and 1940 spring maneuvers discussed earlier. This significant technological change made mechanization a viable alternative to movement by foot or horse, and radically changed the terms of debate. What waited was the demonstration of mechanical improvement that came with the Second World War.

The terms of operational debate obviously were central to the changes of the period. An important event during the interwar period was the cross-Atlantic exchange of ideas captured in **Military Review** for U.S. officers. The format for this journal was different then; the majority of each issue was spent in capturing the ideas of foreign military journals

and summarizing them in short, translated excerpts. American officers had little excuse for not understanding the developments in foreign armies. Articles by Heinz Guderian in both **Military Review** and **Cavalry Journal** presented the ideas associated with blitzkrieg. Hans von Seekt visited the commander of the 7th Cavalry Brigade at Fort Knox in July, 1937, and offered his advice on the unsuitability of American tanks.[58]

American officers were surrounded by the terms of operational debate, both in their own branch and service journals, and in the ideas which were available to them from foreign armies. The problem during the interwar period was that ideas were born without proof, and there was not enough money in the research and development or procurement budgets to produce equipment to field test these new ideas. Many arguments seemed plausible in the absence of proof.

That is why, even today, the articles in **Cavalry Journal** concerning the integration of horse, vehicle, and airplane seem compelling, because even though they were finely woven operational arguments with sound internal logic, they had not stood the test of practice. It was this raging sea of ideas that confronted the interwar generation with fundamental change, but without beacons in the storm, other than the buoys of experience to which they so tenaciously clung. In the end, cavalrymen proved too reluctant to let go.

We must give due recognition to the cumulative external changes with which professional military men were coping in the late 1930s. War was breaking out around the globe, and money became available where none had existed, so the pace of development and procurement quickened. Quality of equipment improved, new types were being fielded. The chronicle of developments for the late 30s is the list of World War II standard equipment, including new radios, the jeep, Sherman tank and the half-track, the M1 Garand rifle and M1 carbine. Field maneuvers on a large scale tested the concepts that previously had existed in the realm of the mind and classroom only. At the same time the size of the army exponentially increased. The cumulative effect of these simultaneous changes must be taken into account before this generation of officers is condemned too easily.

There were many learning opportunities for the Cavalry officer corps. The list includes foreign lessons and ideas throughout the interwar period, the Spanish Civil War, invasion of Poland and France, multiple large-scale maneuvers, training in the California desert, invasion of North Africa and Sicily, all before commitment on the continent which revealed flawed mechanized cavalry doctrine. We should expect them to move toward the boundaries of the world that they knew rather than adhere so tightly to the central precepts surrounding horse cavalry. Even so, review of the literature

finds other voices crying in the wilderness. There were enough officers clamoring for change to say that mechanized cavalry options were ignored, not unavailable. The inevitable conclusion is that the Cavalry officer corps as a whole was resistant to change, and clung too tenaciously to what they knew.

Definition. What of the internal dynamics of Cavalry branch and the War Department as a whole? There was a common culture of ideas taught in the service schools and shared in the branch journals. There also was the common experience of World War I for many officers. The branches, and the Army as a whole, were much smaller than today. Officers within the same branch all knew each other, by reputation, if not personally. Thus many of the requisites for a common cultural perspective and rapid transmission of ideas existed.

The culture of the Army itself changed, principally due to the leadership of the Marshall generation. Marshall did not value the rigid, prescriptive solution. He instead sought the energy and intelligence of a younger crop of leaders, who became marked men in the interwar school system. This generation was molded by repetitive assignments as students and instructors from 1920 to 1940. Many were able to make these educational experiences ones which conditioned them to be adaptive.

What seemed to differ within the Cavalry branch, however, was the reaction of cavalrymen to the challenges of mechanization. Most preferred to accommodate mechanization, but with deference to the old world of the horse cavalry. The death of horse cavalry in the United States Army was excruciatingly slow.[59] As long as the old and the familiar could survive, as long as new technology could be fitted into the old conceptual box, mechanization did not completely supplant the dominant ideology of the horse, or the limited prescriptions for use of the vehicle.

The argument can be made that the ideological debate over mechanization was generationally structured. It goes like this: horse advocates tended to be the older regimental colonels and lieutenant colonels pitted against the younger majors and captains in favor of mechanization. This trend seems to be borne out by the ranks of the various authors over the years 1937-1950 in **Cavalry Journal.** Clearly, the Chiefs of Branch set the precedent of actions in support of mechanization or opposition to it, and represented the older group. But all were not as resistant as Herr and Hawkins.

Some senior officers like Daniel Van Voorhis, Charles L. Scott, and George Van Horn Moseley led the movement toward mechanization. So this was not simply a generational dispute. In fact, the preponderance of responsibility must go to that core of field grade officers who were in a position to

influence policy either way, and who failed to decisively adjust mechanized doctrine to the realities of conditions after 1942.

The strategic requirements of the United States Army led to some of the confusion over mechanization. The focus of most war plans remained the defense of the continental United States, and the explicit mission of the cavalry the defense of the Mexican border. The terrain along the border was best suited to horse cavalry, because the road network was poor, and existing mechanized vehicles were not suited for cross country movement until shortly before World War II.

It would have required an unusual strategic vision of the probability of American involvement in another European war for American cavalrymen to accept road-bound mechanized vehicles as anything more than a supporting arm to horse cavalry. One may argue that the signs were present long before American involvement in World War II that President Roosevelt was committed to such a path, but this requires arguing for a prophetic capability beyond reason. Fairness to the cavalry officer demands that we recognize that he properly assessed the strategic landscape until December 1941.

The standard of judgment then becomes how rapidly internal doctrine shifted to a European scenario after the United States declared war on Germany. Troops were committed on the continent in mid-1944, *after* combat experience in North

Africa, yet the doctrine for mechanized cavalry remained unchanged.

The most compelling question concerning strategic adaptation and vision of future adversaries is why American officers did not more quickly assess the requirement to defeat German medium and heavy tanks. This is an investigation all to itself. American armament, including the antitank guns possessed by mechanized cavalry on reconnaissance, entered the war at a firepower disadvantage, and this imbalance was never rectified. The General Board would conclude that mechanized cavalry needed more fighting power at war's end.[60]

Leadership. Of all the factors relevant to change, the outstanding lesson of the cavalry case is the requirement for innovative leadership. There is the positive example of General Chaffee and those who were his allies, both superior and subordinate. He exercised a decade long influence on change within cavalry that promoted mechanization within the branch. Progressive leaders finally grew frustrated in 1940, and separated armor from cavalry so that Chaffee's force could develop.

Chaffee was the example of how to foster change correctly. He was adept at the politics of the War Department, and instrumental in securing key funds at critical times. Chaffee showcased the 7th Cavalry Brigade to key army leaders at Fort Knox, and made a persuasive case in the field

by leading a competent and tested unit. He mentored a generation of officers who shared the ideology of mechanization, who were its apostles to the larger Cavalry community during the 1930s, and who later commanded divisions and corps during World War II. Robert Grow is the best example of a protégé who later put Chaffee's ideas into practice as an armored division commander.[61] Willis D. Crittenberger is another disciple who commanded a corps during World War II.[62] These officers were among those who formed the core of revolutionaries within Cavalry branch.[63]

Ultimately, the Armored Force was fostered by highly placed leadership, the Army Chief of Staff, and the Commander, Army Ground Forces. Marshall and McNair ensured that the fragile flower of change survived in separate form. The removal to the Armor community of those who followed Chaffee itself demonstrated how significant his leadership was. After the Armored Force left the branch, there was no one else to take over the task of promoting change through innovative, standard-bearing leadership.

On the contrary, the example of Generals Herr and Hawkins shows how leaders in significant positions within the organizational structure can kill change. Herr made no pretense of favoring horse cavalry over mechanized cavalry. All of his actions in favor of mechanization were grudging. General Hawkins had an immeasurable effect on the minds of the

readers of **Cavalry Journal** with his unrelenting diatribes against mechanization. One wonders what effect a more balanced, open-minded view would have had on those officers who held tightly to the status quo. Had Cavalry branch a different Chief after 1938, there might have been no separate Armored Force, and cavalry tactics would have continued to reflect the integration that the 1938 doctrine called for between reconnaissance and assault elements.

This points again to the crucial missing element, an innovative leader to chart the course for mechanized cavalry from the creation of the Armored Force through the war. If there had been a leader of change of Chaffee's mold, then even after the creation of the Armored Force, there was time to adjust mechanized cavalry missions, organization, and doctrine to better accommodate a European battlefield which required it to fight for information, attack or defend.

Integration. Only after the United States began to mobilize were there enough resources to prove the capabilities of mechanization, and to develop better equipment. The maneuvers which began in earnest during the Protective Mobilization period ended the endless arguments over theoretical ideas, and began to ground the capabilities of mechanized forces in reality. These maneuvers had a strong effect on future doctrine, training, and leader development.

There was measurable adaptation among cavalrymen to the demands of World War. For instance, the reconnaissance groups fighting in Europe customarily included combat attachments of engineers, artillery, and tank destroyers.[64] Squadron reconnaissance doctrine retained an offensive flavor reminiscent of the 1938 mechanized doctrine which depended so much on the shock effect of combat cars. Clearly, cavalrymen had begun to adapt their views to the real capabilities offered by mechanized vehicles, but this adaptation existed squarely within the boundaries set by the slow demise of the horse and primacy of the reconnaissance mission for mechanized cavalry. There was no substantial shift to allow mechanized cavalry to assume the attack missions reserved in doctrinal literature for horse units that didn't exist. Such a substantial shift was necessary to avoid fighting the wrong battles with the wrong equipment.

The tests of battle were the final arbiter of the effectiveness of mechanized cavalry adaptation. There is unanimity in reports from the battlefield, be it **Cavalry Journal** articles from 1944 to 1945, War Department Observer reports, post-war staff studies, or the General Board, that mechanized cavalry needed to be organized and equipped to fight traditional cavalry missions, that more dismounts were needed, and "reconnaissance-only" was the wrong mission.

If the Cavalry community had been more homogeneous in its adaptation to the changes brought about by mechanization, then the disruptive removal of the Armored Force need not have occurred, and an integrated reconnaissance and close combat doctrine for the entire branch could have evolved. As it was, resistance to change exacerbated the disruptive effects on the remaining light cavalry units when the heavy mechanized force was removed. More important, had there been an effective community for change within that sphere of cavalry dedicated to mechanized reconnaissance, had there been a visionary leader with sponsorship and a following, Cavalry branch could have shown better adaptation to the missions that awaited it on the European battlefield.

VII. Conclusion: Implications for the Future

The key element of response to change is leadership. Leadership for adaptation is present in the army today. The Army faces substantial changes while seeking to incorporate Information Age warfare and the Force XXI concept, while simultaneously downsizing and coping with less resources.

There are those who argue that we are experiencing a revolution in the conduct of warfare which combines the effects of the information revolution, precision strikes, new technology for space and decisive maneuver.[65] Much of this emphasis includes a sense that we must reevaluate warfare at

the dawn of a new century, in a world that appears more dangerous, region by region.

The key components of the model for successful change depend on an accurate assessment of external forces. Due attention is being given to advancing technologies and their incorporation into operational concepts. We have identified possible sources of revolutionary change in the way we think about war. The key criteria is how the collective leadership of the army will react.

The critical quantity is the sponsorship which will be provided to this effort at the mid-grade leader level. Senior officers will pass from the scene before the twenty-first century is well underway. The best that they can do is foster an environment which accepts change and innovation as being essential. What remains to be seen is how junior leaders will accept this revolution and foster it.

Organizational innovation requires a common willingness to adapt, to reach to the edge of the boundaries of the collective intellectual paradigm. This element deserves more emphasis in the Army today. An ethic must be to value innovation, not to value the status quo. The status quo is a default position that inhibits change and innovation. A culture of innovative leadership, even of revolutionary enterprise will successfully move the organization away from

the known, and into the unknown. Without an ethic of acceptance, the status quo will reign, and change will fail.

ENDNOTES

[1] Articles and books on change which were analyzed to determine a composite model include: Michael J. Meese, "Institutionalizing Maneuver Warfare: The Process of Organizational Change," in Richard D. Hooker, Jr., Ed., **Maneuver Warfare: An Anthology** (Novato, CA: Presidio Press, 1993): 193-216; Michael Howard, "Military Science in an Age of Peace," **Journal of the Royal United Services Institute for Defense Studies** (March 1974): 3-11; Timothy T. Lupfer, **The Dynamics of Doctrine: The Changes in German Tactical Doctrine During the First World War**, Leavenworth Paper Number 4. (Fort Leavenworth, KS: Combat Studies Institute, USACGSC, 1981); Stephen Peter Rosen, **Winning the Next War: Innovation and the Modern Military**, (Ithaca, NY: Cornell University Press, 1991); Richard M. Swain, "Adapting to Change in Times of Peace," **Military Review** (July 1994): 50-58; Donn A. Starry, "To Change an Army," **Military Review** (March 1983): 20-27; Huba Wass De Czege, "How to Change an Army" **Military Review** (November 1984): 32-49; Harold R. Winton, **To Change An Army: General Sir John Burnett-Stuart and British Armored Doctrine, 1927-1938.** (Lawrence, KS: University Press of Kansas, 1988). For a description of the development of this model, see Appendix A.

[2] **Cavalry Field Manual, Volume III, Employment of Cavalry.** (Washington, D.C.: War Department, 3 January 1938): 193. See Appendix D.

[3] Major Robert W. Grow, "Twenty Years of Evolution in American Cavalry Equipment," **Cavalry Journal** (March-April 1937): 128.

[4] Christopher R. Gabel, **The U.S. Army GHQ Maneuvers of 1941.** (Washington, D.C.: Center of Military History, U.S. Army, 1991): 29; David Eugene Johnson, "Fast Tanks and Heavy Bombers: The United States Army and the Development of Armor and Aviation Doctrines and Technologies, 1917-1945," Dissertation. Duke University, 1990, 297.

[5] See Major General John K. Herr, "What of the Future?" **Cavalry Journal** (January-February 1939): 3-6, for a classic statement of the viewpoint that expected American cavalry to be employed in terrain similar to the open expanses of the American southwest (3), and for the view that American cavalry was unique. Herr said: "We must not look to Europe for any leadership of thought with respect to Cavalry." (4)

See also the transcripts of the documents containing the official arguments over the creation of the Armored Force in 1939-1940, reprinted in "Editorial Comment," **Cavalry Journal** (May-June 1946): 35-40.

[6] Among the standard writings concerning the creation of the Armored Force are: Mildred Hanson Gillie, **Forging the Thunderbolt: A History of the Development of the Armored Force.** (Harrisburg, PA: Military Service Publishing Company,

1947); John Leslie S. Daly, "From Theory to Practice: Tanks, Doctrine, and the U.S. Army, 1916-1940," Dissertation. Kent State University, 1993; MG (Ret.) Robert H. Grow, "The Ten Lean Years: From the Mechanized Force (1930) to the Armored Force (1940)," Typescript, U.S. Army Military History Research Collection, 1969, hereafter cited as "Ten Lean Years;" David Eugene Johnson, "Fast Tanks and Heavy Bombers: The United States Army and the Development of Armor and Aviation Doctrines and Technologies, 1917-1945," Dissertation. Duke University, 1990, hereafter cited as "Fast Tanks"; Timothy K. Nenninger, "The Development of American Armor, 1917-1940." Masters Thesis, University of Wisconsin, 1968; Edward J. O'Shaughnessy, Jr., "The Evolution of the Armored Force, 1920-1940." (Carlisle Barracks, PA: U.S. Army War College, 1993); George Macon Shuffer, Jr., "Development of the U.S. Armored Force: Its Doctrine and Its Tactics, 1916-1940," Master's Thesis, University of Maryland, 1959.

[7] Johnson, "Fast Tanks," 269.

[8] Interwar tanks were lightly armed. The 7th Cavalry Brigade (Mechanized) was initially equipped with the M1 combat car, whose main turret armament was a .50 caliber machine gun. Throughout the prewar period, antitank doctrine called only for the .50 caliber machine-gun as the sufficient antitank weapon for most of the cavalry. Cavalrymen were equipped with machine-guns until the M2A4 and M3 light tanks which were armed with the 37mm gun in 1940 [LTC Willis D. Crittenberger, "Cavalry Maneuvers at Fort Knox." **Cavalry Journal** (September-October 1937): 424; Johnson, "Fast Tanks," 327, 232.]

[9] Grow, 127. For an example of how Grow took the intellectual leadership of the "old Cavalry school" head-on, see Major R.W. Grow, "Mechanized Cavalry," **Cavalry Journal** (January-February 1938): 30-31, written in rebuttal of an earlier article by BG Hamilton Hawkins, "The Composition of Army Covering Forces and the Employment of Mechanized Force in This Role," **Cavalry Journal** (November-December 1937): 517-520.

[10] Grow, "Ten Lean Years," 75-78, 83-84; this becomes even more interesting when one considers that the Infantry School did possess demonstration tank units.

[11] Editors, **Cavalry Journal**. "Military Career of General Hawkins An Inspiration to All Cavalrymen." **Cavalry Journal** (January-February 1937): 28-30. For Hawkins first editorial, see "General Hawkins' Notes," **Cavalry Journal** (May-June 1937): 239,264. Quotes from Brigadier General H.S. Hawkins, Retired, "Imagination Gone Wild," **Cavalry Journal** (November-December 1938): 491-497.

[12] Grow, "Ten Lean Years," 85; for a summary of Herr's viewpoints on cavalry employment, modernization, and lessons learned from abroad, see "Cavalry Affairs in Congress." **Cavalry Journal** (May-June 1940): 201-206. In this same

statement, Herr tacitly admitted what was not known about cavalry in his appeal for more training land at Fort Bliss:

> We would learn precisely what mechanization can do over all types of terrain and what it cannot do and finally we would arrive at a very just estimate of what the proper proportion of the essential elements of cavalry should be. (203)

[13] Major Vennard Wilson, "Combined Cavalry Maneuvers," **Cavalry Journal** (January-February 1939): 41-51.

[14] **Cavalry Field Manual, Volume III, Employment of Cavalry,** 3 January 1938, 21, stated "air cooperation is exceptionally important to mechanized cavalry." For aviation use in command and control, see "The Mechanized Cavalry Takes the Field," **Cavalry Journal** (July-August 1938): 291-292, 296-297.

[15] See Grow, "Twenty Years of Evolution," page 129, who said, "radio is the essence of mobility." See also Crittenberger, "Cavalry Maneuvers," for comments on the importance of radio communication as a "modern development," page 426. For a discussion of the early use of radios to control mechanized operations, see "The Mechanized Cavalry Takes the Field," **Cavalry Journal** (July-August 1938): 299. For wartime use, LTC Jay C. Whitehair, "Cavalry Employment of Mechanized Reconnaissance Elements." **Military Review** (May 1943): 26. Quoting Whitehair: "There are within this small troop (mechanized reconnaissance troop) more radios than can be found in an entire infantry regiment."

[16] Adna Chaffee argued that mechanized cavalry doctrine which integrated as a combat team "air service, ground reconnaissance, combat car, machine gun and artillery elements...should be assigned those missions of mobile combat which are most important to success of the Army" following the successful conclusion of the 1939 First Army Maneuvers. BG Adna R. Chaffee, "The Seventh Cavalry Brigade in the First Army Maneuvers." **Cavalry Journal** (November-December 1939): 460.

[17] **FM 2-15, Cavalry Field Manual, Employment of Cavalry,** 8 April 1941, 16.

[18] For a description of "modernized" horse cavalry doctrine, which fully accommodated mechanization, but still argued for a place of the horse well into the Protective Mobilization Period, see Major General Robert C. Richardson, Jr., "The Wider Role of Cavalry," **Cavalry Journal** (January-February 1941): 2-8. Richardson was the Commander, 1st Cavalry Division.

[19] **Cavalry Field Manual, Volume III, Employment of Cavalry,** (Washington, D.C.: War Department, 3 January 1938): 3,4,9.

[20] **Cavalry Field Manual, Volume II, Mechanized Cavalry,** (Washington, D.C.: War Department, 3 January 1938): 96; Academic Notes, The Command and General Staff School, Major R.S. Ramey, **Notes on the Organization and Employment of**

Mechanized Cavalry, Military Review (March 1940): 76,74, hereafter cited as **Notes; Cavalry Field Manual, Volume III, Employment of Cavalry**, 3 January 1938, 3, stated that "Strategic mobility is inherent in mechanized cavalry."

[21] BG Adna R. Chaffee, "The Seventh Cavalry Brigade in the First Army Maneuvers" **Cavalry Journal** (November-December 1939): 451,456,458,460; Academic Notes, The Command and General Staff School. Major R.S. Ramey. **"Strategic and Tactical Mobility:** As Illustrated by Operations of the 7th Cavalry Brigade, Mechanized, in the First Army Maneuvers, August 1939," **Military Review** (March 1940): 95.

[22] Gabel, 8-19.

[23] Ramey, **Notes**, 72.

[24] LTC William M. Grimes, "The 1940 Spring Maneuvers." **Cavalry Journal** (March-April 1940): 98-99; Timothy K. Nenninger, "The Development of American Armor, 1917-1940." Masters Thesis, University of Wisconsin, 1968, especially Chapter III, 31-40.

[25] Gillie, 205.

[26] "The Sixth Cavalry in the Fourth Corps Maneuvers," **Cavalry Journal** (May-June 1940): 194. Grimes, "The 1940 Spring Maneuvers," **Cavalry Journal** (March-April 1940):102,105. Grimes' article anticipates events in the maneuver, and amounts to a doctrinal treatise on cavalry and corps operations. See Crittenberger, "Cavalry Maneuvers," page 425-6 for Colonel Bruce Palmer's (Commander, 1st Cavalry Regiment {Mechanized}) comments concerning the importance of using mechanization for reconnaissance, not combat. This is an early example of the strength of the idea of reserving mechanized cavalry for light, reconnaissance missions.

[27] **Field Manual 2-15, Cavalry Field Manual, Employment of Cavalry**, (Washington, D.C.: War Department, 8 April 1941): 8, 97-98; Colonel Woods King, "Corps Reconnaissance Units." **Cavalry Journal** (September-October 1941): 73.

[28] The first corps reconnaissance regiment was the 6th Cavalry, which converted to this organization 1 December 1939. See "Corps Reconnaissance Regiment," diagram in **Cavalry Journal** (November-December 1939): 498-9; Major Thomas J. Heavey, "The Horse-Mechanized Regiment," **Cavalry Journal** (September-October 1940): 424.

[29] The mechanized squadron characteristics were listed as high road speed, light armor, heavy automatic fire power, great strategical and tactical mobility when employed in terrain with a good road net. Charles F. Houghton, "Cavalry Regiment (Horse and Mechanized)" **Military Review** (October 1941): 25; see also LTC William M. Grimes, "The 1940 Spring Maneuvers." **Cavalry Journal** (March-April 1940): 104; for an early comparison of the perceived capabilities of horse versus mechanized cavalry, and the conclusion that mechanized cavalry

excelled in strategic mobility, see Major Vennard Wilson, "Combined Cavalry Maneuvers," **Cavalry Journal** (January-February 1939): 51.

[30] Houghton, 26-27.

[31] Major General John K. Herr, "What of the Future?" **Cavalry Journal** (January-February 1939): 4-5.

[32] COL Maxwell A. O'Brien, "113th Cavalry (Horse-Mechanized) In Louisiana Maneuvers" **Cavalry Journal** (November-December 1941): 37-39. Gabel, 118-119.

[33] "The Sixth Cavalry in the Fourth Corps Maneuvers." **Cavalry Journal** (May-June 1940): 200.

[34] Mary Lee Stubbs, and Stanley Russell Connor. **Army Lineage Series. Armor-Cavalry: Part I: Regular Army and Army Reserve.** (Washington, D.C.: Government Printing Office, 1969): 70-71.

[35] Kent Roberts Greenfield, **The Organization of Ground Combat Troops.** (Washington, D.C.: Office of the Chief of Military History, U.S. Army, 1947): 268.

[36] "Horse cavalry capabilities are offensive combat; exploitation and pursuit; seizing and holding important terrain...; ground reconnaissance; ground counterreconnaissance (screening)...; security...; delaying action; covering the retrograde movements of other forces; combat liaison between large units; acting as a mobile reserve; harassing action; and surprise action...deep in hostile rear areas." **War Department Field Manual FM 100-5, Field Service Regulations, Operations**, (Washington, D.C.: War Department, 15 June 1944): 8-9.

[37] The Cavalry School, **Employment of Mechanized Cavalry**, Instructional Manual, 1944, 1.

[38] For "reconnaissance by stealth" see FM 2-15, 1941, pages 97-98. For troop emphasis, see **War Department Field Manual FM 2-20, Cavalry Reconnaissance Troop, Mechanized**, 24 February 1944, 2.

There was also a difference of perspective between the FSR 100-5 (1944) and FM 2-30 (1943) on the use of attachments to strengthen cavalry for combat action, particularly to fight for information. The Cavalry Squadron Manual allowed for more adaptability and refinement within the intent to fight for information. This might imply a difference of perspective between the War Department and Army Ground Forces. The War Department FSR remained dormant and traditional.

[39] **Cavalry Field Manual FM 2-30, Cavalry Mechanized Reconnaissance Squadron**, 29 March 1943, 16; for an early critique of reconnaissance by stealth, see Robert W. Grow, "Armor for Cavalry Reconnaissance Vehicles is Essential," **Cavalry Journal** (September-October 1938): 433.

[40] Field Manual 2-30, **Cavalry Field Manual: Cavalry Mechanized Reconnaissance Squadron**, (Washington, D.C.: U.S. War Department, 29 March 1943): 4,13,16,55,19.

[41] "Mechanized Cavalry on Reconnaissance." **Cavalry Journal** (July-August 1944): 70; for the intent in providing the support troop see LTC Jay C. Whitehair, "Cavalry Employment of Mechanized Reconnaissance Elements." **Military Review** (May 1943): 25.

[42] Some squadron organizations that existed during the Protective Mobilization period disappeared during the war. These were the machine gun troop and the motorcycle troop. The motorcycle troop was an innovative organization that appeared with the 1940 corps reconnaissance regiment. The reconnaissance squadron manuals show that the motorcycle troop disappeared from cavalry organization between 1942 and 1943. The reason for the disappearance of the motorcycle troop was that those functions were demonstrated to be in the capacity of bantams or jeeps as scout vehicles. See "Expansion of the 7th Cavalry Brigade," **Cavalry Journal** (May-June 1940): 207, and page 198, "The Sixth Cavalry in the Fourth Corps Maneuvers," for a description of origin and ineffectiveness of motorcycle units, which were best suited for command, control, and messenger service. See also COL Maxwell A. O'Brien, "113th Cavalry (Horse-Mechanized) In Louisiana Maneuvers" **Cavalry Journal** (November-December 1941): 38. The machine gun troop had served the purpose of a base of fire element for the 1938 and 1941 reconnaissance squadron; this function was taken over by the assault gun troop. **Cavalry Field Manual, Volume III, Employment of Cavalry**, 3 January 1938, 6.

[43] MAJ Roberts S. Demitz. "The Reconnaissance Squadron, Armored Division." **Military Review** (November 1943): 35.

"The performance of a mission of counterreconnaissance is not a good assignment for a Reconnaissance Squadron...If the squadron is to perform such a task, it should be strongly reinforced by infantry, artillery, and any other arms dictated by the situation."

[44] LTC Jay C. Whitehair, "Cavalry Employment of Mechanized Reconnaissance Elements." **Military Review** (May 1943): 27. This article concluded with six "R's" of reconnaissance:

1. Reconnaissance units are for reconnaissance.
2. Restrict combat missions to vital needs.
3. **Reinforce** them when we fight them.
4. In Reserve when no proper mission.
5. Resupply them on distant missions.
6. Rest and recondition them every change we get.

Concerning the need to fight for information, see MG Charles L. Scott's early identification of the need for stronger reconnaissance forces as an observer of the North African conflict between the British and Germans. "Armored Reconnaissance." **Cavalry Journal** (November-December 1942): 20-22.

[45] **Modern Reconnaissance: A Collection of Articles from The Cavalry Journal** (Harrisburg, Pennsylvania: The Military Service Publishing Company, 1944)

[46] LTC Jay C. Whitehair, "Cavalry Employment of Mechanized Reconnaissance Elements." **Military Review** (May 1943): 24-25.

[47] LTC William T. Bird, "Considerations for the Employment of Mechanized Cavalry," **Military Review** (January 1945): 73-74.

[48] See Bibliography for list of Observer Board Reports and After Action Reports. There is remarkable unanimity on these two themes.

[49] In addition to Hoy, cited next, see "Mechanized Cavalry Operations." **Cavalry Journal** (July-August 1946): 13.

[50] Lieutenant Colonel Charles J. Hoy, "Trends in Mechanized Cavalry." **Cavalry Journal** (July-August 1945): 57. Hoy listed the missions of mechanized cavalry from Normandy to the Rhine as:

1. Seize and hold critical terrain features for a limited time.
2. Assist in the pursuit and exploitation of disorganized enemy troops.
3. Fill gaps between large units.
4. Perform ground reconnaissance and counterreconnaissance.
5. Accomplish protective missions (security for other forces on the march, at the halt, and on the battlefield)
6. Protect line of communication troops
7. Execute delaying actions to cover the retrograde movement of other troops.
8. Perform combat liaison between large units. (57)

[51] Study Number 49, **Armored Section, Tactics, Employment, Technique, Organization, and Equipment of Mechanized Cavalry Units**, Report of the General Board United States Forces, European Theater, was used to prepare this paper. The Armored Section Conference to discuss its findings was held 27 November 1945. Hereafter cited as **General Board.**

[52] Major William R. Kraft, "Cavalry in Dismounted Action." **Cavalry Journal** (November-December 1945): 12.

[53] See **General Board** pages 9, 20-21.

[54] COL E.H.J. Carns. "Organization and Equipment of Mechanized Cavalry Units. (Washington, D.C.: Headquarters Army Ground Forces, 6 June 1946), 1-2; Staff Study. 1944 mission statement is from **Field Service Regulations, FM 100-5, Operations**, 15 June 1944, page 9.

[55] For an example of this type of argument, see Captain Raymond F. Baker, "Horses Were Used." **Cavalry Journal** (May-June 1946): 30-32, and Colonel Fred W. Koester, "The Horse's Place in Our Future," pages 33-34, same edition.

[56] For an example of a post-war lament from a cavalryman who fought in the ETO, see CPT Stuart J. Seborer, "Modern Cavalry

Organization." **Armored Cavalry Journal** (March-April 1947): 23-25.

[57] See LTC Robert W. Grow, "New Developments in the Organization and Equipment of Cavalry," **Cavalry Journal** (May-June 1939): 204-207.

[58] All issues of **Military Review** for the period December 1935-March 1947 were reviewed for this paper. Examples of Guderian's work are "Motor and Horse," a translation in **Military Review** (June 1940): 50-51 and "Armored Units on Roads to Victory," a translation in **Military Review** (June 1941): 34-35; Johnson, "Fast Tanks," 333.

[59] Americans were not alone in this regard. **Cavalry Journal** is full of articles in 1943 and 1944 by Russian officers extolling the praises of the Russian horse cavalry. It is easy to forget that aside from the famous Panzer divisions, most of the German army remained horse drawn throughout World War II.

[60] **General Board**, 22; See also Johnson, "Fast Tanks," 502-533.

[61] George F. Hofmann, "Armor History and Operations in 1944: The 6th Armored Division Experience in the European Theater of Operations, A Study in Leadership Development and Execution," **Armor** (September-October 1994): 10.

[62] Crittenberger was a Corps Commander in Italy. His papers are housed at the United States Military History Institute, Carlisle Barracks, Pennsylvania, and are a standard reference for those authors who have written concerning the birth of the Armored Force. Crittenberger was the Plans and Training Officer, 7th Cavalry Brigade. See "With the Mechanized Cavalry," **Cavalry Journal** (July-August 137): 32.

[63] The best overall description of the activities and influence of Adna Chaffee remains Mildred Harmon Gillie, **Forging the Thunderbolt: A History of the Development of the Armored Force.** (Harrisburg, PA: Military Service Publishing Company, 1947).

[64] **General Board**, 11; The ability for the corps reconnaissance regiment to obtain attachments and satisfactorily serve as a task force had been discussed as early as 1941. See "Employment of 4th Cavalry (H-M)" **Cavalry Journal** (November-December 1941): 46.

[65] Presentation to the Advanced Military Studies Program, Ft. Leavenworth, Kansas by Dr. Blackwell, Strategic Assessment Center, 12 December 1994.

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Appendix A: Development of a Model of Change

The process used to develop a model for analysis of successful organizational change for this monograph was to review significant writings concerning military change and innovation, outline key ideas or models contained in them, and then look for common elements. To describe how each of these elements were intellectually combined into one model is impractical here. However, there are remarkable similarities between several points in the arguments reviewed which make certain fundamental qualities of successful change more easily apparent.

For the sake of the reader who wishes to develop his or her own conclusions concerning organizational change in general, the key elements in each book or article are outlined in this appendix. Words which connect to the consolidated model of change discussed in the monograph, and diagrammed at Illustration 1, are outlined in **bold type.** For complete citations, refer to the Bibliography. Page in numbers parentheses refer to the original source.

Michael Howard, "Military Science in An Age of Peace."

Professional forces have two fundamental difficulties in age of peace

social environment is indifferent or hostile (4)

forces function in a sort of void

like a sailor navigating by dead reckoning

by extrapolation from the experiences of the last war (4)

Military profession is a **bureaucracy** (4)

"bureaucracies **accommodate** themselves only **with great difficulty** to outstanding original thinkers" (4)

Impossible to verify ideas- wrong or right (4-5)

Problem of encouraging original thought in a hierarchy (5)

Military science progresses by average minds in a triangular dialogue over

operational requirement,

technological feasibility

financial capability

"Almost **a priori** I think one can say that a better case can always be made out against innovation than can be made for it" (6)

"It becomes increasingly difficult as warfare becomes more complex, as the bureaucracy becomes more dense, as the problems

become harder, for anybody credibly to emerge and impose his will on the debate in this basically irrational manner. Thus as military science develops, innovation tends to be more difficult rather than less." (6)

Therefore the **quickest to adapt** among equals will be most successful' (6)

"Flexibility both in the minds of the Armed Forces and in their organization" (6)

Adaptable, flexible, versatile, reacting to technological, political, social change (7)

Timothy T. Lupfer, **The Dynamics of Doctrine: The Changes in German Tactical Doctrine During the First World War.**

Dynamic Process of Change (viii)

perception of a need of change
solicitation of **ideas**
definition of the change
dissemination of the change
enforcement throughout the army
modification of organization and equipment
thorough training
evaluation of effectiveness
subsequent refinement

Michael J Meese, "Institutionalizing Maneuver Warfare: The Process of Organizational Change."

Doctrinal Innovation Model (196)

Initiating Processes

Definition

capabilities must be **linked** technology, materiel, command & control, personnel, training

link doctrine **to** a potential **enemy** (197)

Impetus

strategic forcing-make the idea work so that it cannot be ignored

strategic building-**build** contacts/**allies** within the organization (197) also called doctrinal **championing** (198)

Implementing Processes

Strategic Context

where will the new doctrine fit? (199)

selecting what the implementation details mean (199)
delineation process identifies the domain of the innovation (199)

Structural Context
faces, spaces, places on organizational charts (200)
running the lines out to the lowest effected unit (200)

Diffusion
this determines the relative permanence of the innovation (200)
leaders must **facilitate** diffusion (200)

Factors Affecting Innovation (201)
organizational structure
organizational **culture**
organizational stress
civilian influence
technology

Stephen Peter Rosen **Winning the Next War: Innovation and the Modern Military.**

Problem of military innovation is essentially the problem of **bureaucratic innovation** (2)

There is much in the military hierarchy, in its **educational** process that inhibits innovative ideas (2)

In bureaucracies the **absence of innovation is the normal state** (5)

Major innovation involves change in the concepts of operation of combat arm, a change in the relation of that combat arm to other combat arms (7)

"Thus steady doctrinal development within the military, not intervention by civilians or military "mavericks" explains this peacetime innovation" (18)

"This perspective suggests that peacetime military innovation occurs when **respected senior military officers formulate** a strategy for innovation" (21)

"Peacetime military innovation may be explainable in terms of how **military communities** evaluate the future character of war, and how they effect change in the **senior officer corps.**" (52)

Wartime innovation is related to the development of new measures of strategic effectiveness, effective intelligence collection, and an organization able to implement the innovation within the relatively short time of the war's duration. (52)

Rather than money, **talented military personnel**, time, and information have been the key resources for innovation. The study of peacetime military innovation showed that when **military leaders could attract talented young officers** with great potential for promotion to a new way of war, and then were able to **protect and promote** them, they were able to produce new, usable military capabilities. (252)

General Donn A. Starry, "To Change an Army"

Generalized requirements for effecting change:
- institution or mechanism to identify the need for change
- **common cultural bias** in the solution of problems
- a **spokesman** for change
- spokesman must build a **consensus**
- **continuity** among the architects of change
- someone at or near the top as a **champion** or supporter
- proposed changes must be **subjected to trials** (23)

Must have **adequate intellectual leadership** to effect change in the army (26-27)

Richard M. Swain, "Adapting to Change in Times of Peace"

Five necessities for institution to keep up with change in times of peace
- a correct **strategic rationale**
- a concept of military operations suitable for that purpose
- suitable investment in **R&D and procurement**
- **open-minded proponent for the whole**
- convincing **spokesperson** to decision-makers, public (56)

Huba Wass de Czege, "How to Change an Army"

The need for **"common cultural perspective"** (36)
Rational **integration** of methods and capabilities (37)
Fundamental key: raise the level of the knowledge and practice of the science and art of war/need for better theory (38)

Needed change doesn't take place when **conditions change** and soldiers do not recognize it; therefore the "slow and agonizing death of the horse cavalry" (40)

Need to organize knowledge
Need to develop and teach theory
Scientific methodologies for study of conditions, methods, and means of war (43)

"In sum, the art of war demands **disciplined intellectual activity.**" (47)

Harold R. Winton, **To Change an Army: General Sir John Burnett-Stuart and British Armored Doctrine, 1927-1938.**

Summarizes Paret, Howard, Holley, Lupfer, Starry, Wass de Czege on change

I.B. Holley- assemble information, formulate doctrinal generalizations, disseminate to field (4)

Huba Wass de Czege- success in military reform comes from harmony between soldiers, ideas, and weapons (5)

Peter Paret- military men must be attuned to **technological** and **social dimensions** of change (4)

Conclusions on the general problem of military reform 239

close and dynamic relationship between purposes of military institution and forms they take (239)

senior military leaders must articulate a **vision** of future war informed by:

strategic requirements,
emerging **technologies,**
nature of likely **adversaries,**
nature of one's **historical, cultural,** and **operational** styles (239)
ultimately leading to doctrine

Doctrine requires actual **field testing** for refinement and full implementation thorough organization, weapons, equipment, training (240)

These decisions require **high-level support** and consensus building

Most difficult yet most important requirement: reformers must combine original thought with traditional temperaments in order to avoid becoming isolated (239-240)

Appendix B: Doctrinal Evolution: Employment of Mechanized Cavalry

3 January 1938, Cavalry Field Manual, Volume III, Employment of Cavalry,

The tactical functioning of mechanized cavalry may be divided into four classifications-- reconnaissance, striking power, fire support, and defense against hostile antitank weapons. The regiment is the smallest mechanized cavalry organization containing all of these elements. (6)

1 October 1939, FM 100-5, (Tentative) Field Service Regulations, Operations,

Mechanized cavalry finds its principal role in employment on distant missions covering a wide area. If properly supported it can seize an objective but cannot hold it for a prolonged period without the support of Infantry or horse Cavalry, and artillery.

Because of its great mobility, armor protection, and fire power, mechanized Cavalry is able to intervene rapidly at a decisive point in battle and produce a powerful effect. On the offensive, mechanized Cavalry is the essential combat means for exploitation of a success; on the defensive, it is particularly useful in a counterattack and in covering a retirement. When held in reserve, it constitutes a powerful means in the hands of higher commanders to parry or execute an enveloping maneuver, to reestablish the continuity of a front, or to exploit a success. (9-10)

10 July 1940, *Armored Force created*

8 April 1941, FM 2-15, Cavalry Field Manual, Employment of Cavalry,

Regiment, Horse and mechanized: This unit is organized and equipped especially to perform reconnaissance and security missions for the army corps. The regiment carries out its missions during the concentration and movement of the corps, when contact with the enemy is gained, during battle, pursuit, and in retirement. It may be employed as corps reserve. In addition to reconnaissance and security missions, and to carry out these missions, the regiment engages in offensive and defensive operations.

Reconnaissance squadron, mechanized, cavalry division: It is organized and equipped especially to perform reconnaissance missions for the cavalry division of which it is an organic part. The armored troop provides a means of breaking through hostile resistance that may have held up the scout car and motorcycle elements. The squadron may be reinforced by portee horse units from the regiments of the division. When required, the squadron or its elements may be assigned security or delaying missions. (4)

1 March 1942, *Office of the Chief of Cavalry abolished*

29 March 1943, FM 2-30, Cavalry Field Manual, Cavalry Mechanized Reconnaissance Squadron.

The reconnaissance squadron is organized and equipped for the specific purpose of securing the detailed information needed by the commander of a motorized infantry division or cavalry division to plan his operations intelligently. (16)

15 June 1944, FM 100-5, Field Service Regulations, Operations.

Mechanized cavalry units are organized, equipped, and trained to perform reconnaissance missions employing infiltration tactics, fire, and maneuver. They engage in combat only to the extent necessary to accomplish the assigned mission. (9-10)

28 August 1944, FM 2-30, Cavalry Reconnaissance Squadron, Mechanized.

The cavalry reconnaissance squadron, mechanized, is organized, equipped, and trained to perform reconnaissance missions. Other type missions are given only in furtherance of a reconnaissance mission unless no other troops are available for other type operations for the division or other larger unit. Reconnaissance missions are performed by employment of infiltration tactics, fire, and maneuver. (20)

Appendix C: Evolution of the Reconnaissance Squadron

1941: Reconnaissance Squadron, Mechanized, Cavalry Division[1]

Squadron Headquarters
2 Reconnaissance Troops
Motorcycle Troop
Armored Troop

1943: Cavalry Mechanized Reconnaissance Squadron[2]

Headquarters and Headquarters Troop
3 Reconnaissance Troops
Support Troop (Light Tank)
Medical Detachment

1944: Cavalry Reconnaissance Squadron, Mechanized[3]

Headquarters, Headquarters and Service Troop
3 Reconnaissance Troops
Assault Gun Troop
Light Tank Company
Medical Detachment

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1 FM 2-15, **Cavalry Field Manual, Employment of Cavalry**, 8 April 1941, 4.

2 FM 2-30, **Cavalry Field Manual, Cavalry Mechanized Reconnaissance Squadron**, 29 March 1943, 93.

3 FM 2-30, **Cavalry Reconnaissance Squadron, Mechanized**, 28 August 1944, 2.

Appendix D: Glossary of Original Terms[1]

armored car- (1938) an armed and armored wheeled motor vehicle designed primarily for reconnaissance
(1941) not listed

combat car- (1938) an armed and armored track-laying or convertible track and wheel motor vehicle designed primarily for combat
(1941) not listed

light tank- (1938) not listed
(1941) an armed and armored track-laying or convertible track and wheel motor vehicle designed primarily for combat

mechanized cavalry- (1938) cavalry whose principal items of equipment consist of self-propelled motor vehicles designed for combat purposes and upon which weapons are mounted
mechanized elements- (1941) those elements of cavalry equipped with armored and self-propelled motor vehicles designed for combat purposes and in which weapons are mounted

scout car- (1938) a motor vehicle used primarily for reconnaissance
(1941) an armed and armored motor vehicle used primarily for reconnaissance

[1]These definitions are taken from glossaries included in: **Cavalry Field Manual, Volume III, Employment of Cavalry,** 3 January 1938. and **FM 2-15, Cavalry Field Manual, Employment of Cavalry,** 8 April 1941.

Appendix E

Illustration 1

Model of Organizational Change

- Context: External Forces of Creation
  - Political
  - Social
  - Cultural
  - Technological
  - Operational
- Definition: Internal Interactions
  - Common cultural perspective
  - Linked to strategic requirements
  - With clear anticipation of adversaries
- Leadership: The Key Dynamic
  - Standard Bearer with vision
  - Senior Sponsor
  - Community of Spokesmen
- Integration: Action Links
  - Tests
  - Resources
  - Linkage to Doctrine,Training,Leader Development,Soldiers
  - Feedback to Context